SLOVENSKI STANDARD
SIST EN IEC 63128:2019/oprA1:2023

01-september-2023

Krmilni vmesnik za razsvetljavo za temnenje - Analogni napetostni temnilni vmesnik za elektronske krmilne naprave z virom toka - Dopolnilo A1

Amendment 1 - Lighting control interface for dimming - Analogue voltage dimming interface for electronic current sourcing controlgear

Lichtsteuerschnittstelle für Dimmung - Analoge Spannungsschnittstelle für elektronische Betriebsgeräte mit Stromquellen-Charakteristik

Amendement 1 - Interface de commande d'éclairage pour variation d'intensité - Interface de variation de tension analogique pour appareillage d'alimentation électronique

Ta slovenski standard je istoveten z: **EN IEC 63128:2019/prA1:2023**

ICS:

29.140.50	Instalacijski sistemi za razsvetljavo	Lighting installation systems

SIST EN IEC 63128:2019/oprA1:2023 **en**

34/1053/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:	
IEC 63128/AMD1 ED1	
DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
2023-07-14	**2023-10-06**
SUPERSEDES DOCUMENTS:	
34/999/CD, 34/1044/CC	

IEC TC 34 : LIGHTING	
SECRETARIAT: United Kingdom	SECRETARY: Mr Petar Luzajic
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING **Attention IEC-CENELEC parallel voting** The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant "In Some Countries" clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Amendment 1 - Lighting control interface for dimming - Analogue voltage dimming interface for electronic current sourcing controlgear

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

FOREWORD

This amendment has been prepared by committee TC34 Lighting / WG11 Control Interface

The text of this amendment is based on the following documents:

Proposal	Questionnaire	Report of voting	Compilation and Resolution of Comments
34WG11(JDG)007b	34/923/Q	34/932/RQ	34/1044/CC

Full information on the voting for this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the maintenance result date[1] indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

The following proposals serve to amend IEC 63128 AMD1 according to the decisions of IEC TC34 WG11 at their meeting in March 2023.

Proposal

On page 2 of current standard

CONTENTS

Amend the existing table of contents by replacing the "Bibliography" entry with the following new section 7, new Bibliography page reference and new Appendix A item:

Insert the following after the Figure 3 reference:

Figure 4 – Marking of dim-to-warm electronic light source controlgear

[1] The National Committees are requested to note that for this publication the maintenance result date is ....

Figure A1 – Typical warm dimming LED system utilizing two LED sources

Figure A2 – Full power rated CCT:2700K; Dimmed Relative Power Min: 10%

Figure A3 – Full power rated CCT:3000K; Dimmed Relative Power Min: 10%

Figure A4 – Full power rated CCT:3000K; Dimmed Relative Power Min: 30%

On page 6 of current standard

Insert the following new term definition as new item 3.6 and renumber subsequent items in section 3 appropriately:

3.6
Correlated Color Temperature Factor (CCTF)
ratio of the dimmed CCT to the full power CCT

Note 1 to entry: This ratio is used in the calculation of warm dimming responses for applicable LED systems.

Insert the following new term definition as item 3.9 (after renumbering of previous insertion; would have been item 3.8 before renumbering):

3.9
warm dimming
the capability of controlgear to decrease the color temperature of its LED light sources as the power, and therefore the light output, of the light sources are decreased

On page 6 of current standard

Replace the sentence following the Figure 1 title with:

Markings should be readable with normal vision.

On page 9 of current standard

Insert the following new section 7 after item 6.5, including the new footnotes, preferably starting as new page 10:

7 Simulation of incandescent dimming (optional)

7.1 General

Warm dimming is an optional feature implemented in some lighting controlgear to imitate the behaviour of incandescent filament sources as the power supplied to them is decreased[1]. If warm dimming is implemented, clause 7.2 shall apply.

For lighting systems that implement warm dimming and can utilize a variety of luminaires or light sources, uniform warm dimming response is important for colour consistency throughout the lighting system.

7.2 Response to light source dimming

To simulate the dimming response of an incandescent light source, the CCTF of a warm dim system shall follow the formula below:

For an LED dim-to-warm system that has a maximum CCT of CCT_{max} occurring at the maximum power delivered to the LEDs of P_{max}, then the CCT Factor, CCTF, at a power P that is less than P_{max} is determined by the relative power P_r that is calculated by the ratio P/P_{max}. The CCTF at this reduced relative power level is then calculated by the following formula.

$$CCTF = P_r^{0.37}$$

To determine the CCT at the reduced power level P, the CCT_{max} is then multiplied by the CCTF.

~~Where P_r is the relative power being supplied by the driver (or drivers) to all LED sources contributing to the warm dim function, with P_r=1.0 being maximum LED power, occurring when the system is producing the highest lumen and CCT outputs.~~

ANNEX A provides examples of a relationship between CCTF and an analog 0-10 volt control voltage.

Note: When implementing warm dimming, it is recommended that the minimum CCT go no lower than 1800K.

7.3 Dim-To Warm Marking

Electronic light source controlgear utilizing dim-to-warm functionality in accordance with this document shall be clearly marked with the following marking (see Figure 4):

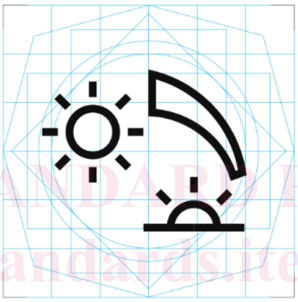

Figure 4 – Marking of dim-to-warm electronic light source controlgear

Markings should be readable with normal vision.

On page 10 of current standard

Insert the following Annex A on a new page following the Bibliography at the end of the document, probably starting as page 12:

Annex A
(Informative)

Warm Dim Control for Analog Dimming Having Controlgear with a Linear Output Power to Control Voltage Response

A.1 General

Typically, dimming an LED simply lowers its lumen output while maintaining its rated color temperature. Legacy heated filament lamps (incandescent) respond to dimming by a significant shift to warmer color temperatures at lower power. This dim-to-warm characteristic is often a desirable response. Implementation of a dim-to-warm feature in an LED luminaire allows this response to be available along with the other positive features of LED equipment.

Typical warm dim systems utilize a dimmable LED driver with at least two output channels. Each channel controls an LED of a different color temperature/CCT. The overall CCT of the system is controlled by independently varying the power delivered to each of the LEDs and mixing the output of all the LED sources to achieve a composite, uniform CCT. As an example, a basic block diagram of a two-channel system is shown in Figure A1.

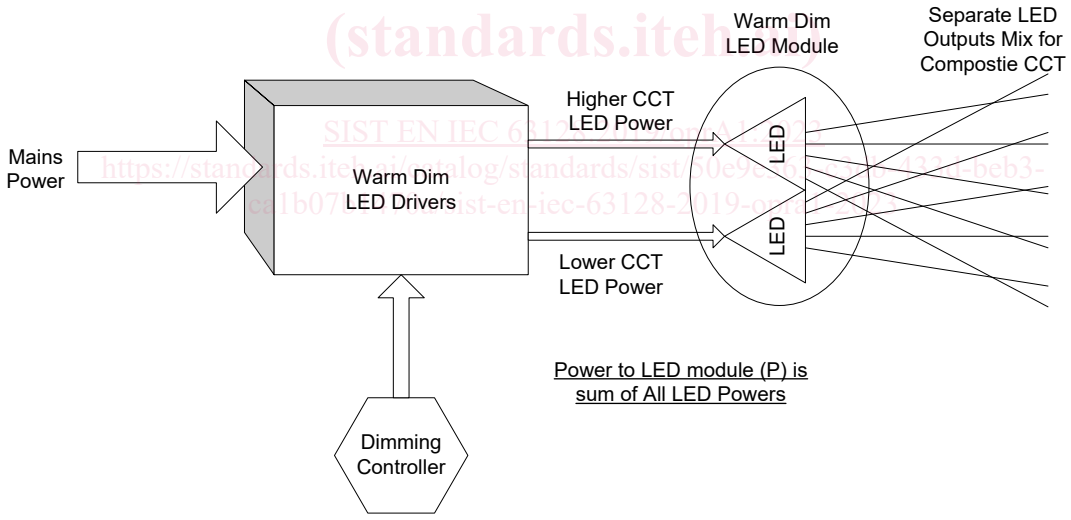

Figure A1
Typical Warm Dimming LED System Utilizing Two LED Sources

A.2 Correlation to 0-10 Volt Control

In the warm dim control standard as described in Clause 7, the CCT during dimming is based on the relative power supplied to the LED source. Determining the CCT Factor as a function of the 0-10 volt control voltage, V_C, of an analog dimmer is more complex since the control voltage to power function is not completely defined for the controlgear. The minimum dimmed power depends on the design of the controlgear and should be taken into account in the calculation of the CCTF.